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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/579,037 | 05/10/2006 | Daniel Hendrix | 016906-0510 | 3893 |
| 22428 7590 07/08/2009 FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007 | | | EXAMINER WALBERG, TERESA J | |
| | | | ART UNIT 3744 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/579,037

Applicant(s)

HENDRIX ET AL

Examiner

Teresa J. Walberg

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2009.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-16 and 18-29 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 11-16 and 18-29 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 10 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/06)
Paper No(s)/Mail Date 4/23/09
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 11-16, 19, 21, 23, and 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dimitriou (4,572,766) in view of Wei et al (2004/0067414).

Dimitriou discloses a heat exchanger with disk structure including a plurality of disks (Fig. 7), each pair of adjacent disks defining an intermediate space through which a heat transfer medium is configured to flow (Fig. 7), a heat transfer medium inlet (26, 27), a heat transfer medium outlet (53), a first set of at least two heat transfer medium ducts (26, 27 in Fig. 4) in fluid communication between each intermediate space and one of the heat transfer medium inlet and the heat transfer medium outlet (Figs. 4 and 5), the first set of at least two heat transfer medium ducts runs perpendicular to the plane of the disks (26, 27), each intermediate space having a first set of two openings configured to permit flow to enter the intermediate space (26, 27) and a second set of two openings (32, 33) configured to permit flow to exit the intermediate space (Fig. 4), the first set of at least two heat transfer medium ducts is in fluid communication between the first set of two openings of each intermediate space and the heat transfer medium

inlet, and wherein a second set of at least two heat transfer medium ducts is in fluid communication between the second set of two openings and the heat transfer medium outlet (Figs. 4 and 5), the plurality of disks having an axially symmetrical design (Fig. 4), the regions of the first and second sets of openings having a raised design such that charge air could flow through between the pairs of adjoining disks (Figs. 4 and 5), the intermediate space being configured such that the heat transfer medium is distributed over an entire width of the intermediate space (Fig. 4).

Dimitriou does not state that the heat exchanger is a charge-air coolant radiator or an oil cooler. However, charge-air coolant radiators and oil coolers are known in the heat exchanger art. It would have been obvious to one of ordinary skill in the art to use the heat exchanger of Dimitriou as a charge-air coolant radiator or an oil cooler as a matter of intended use.

Dimitriou does not disclose the two heat transfer medium ducts being in fluid communication with the same heat transfer medium inlet, the heat transfer medium inlet having a branching section and the branching section being arranged in a plane perpendicular to the at least two heat transfer ducts such that the branching section is offset from the plurality of disks.

Wei et al disclose a heat exchanger having two heat transfer medium ducts (see Fig. 3) which are in fluid communication with the same heat transfer medium inlet (300), the heat transfer medium inlet having a branching section (300) and the branching section (300) being arranged in a plane perpendicular to

the at least two heat transfer ducts (the parallel heat transfer passages shown extending across the width of plates 302) such that the branching section (300) is offset from the plurality of disks (Fig. 3).

.It would have been obvious in view of Wei et al to connect the two heat transfer medium ducts to be in fluid communication with the same heat transfer medium inlet, the heat transfer medium inlet having a branching section and the branching section being arranged in a plane perpendicular to the at least two heat transfer ducts such that the branching section is offset from the plurality of disks in the heat exchanger of Dimitriou the motivation being to make it easier to make fluid connections for the heat exchanger .

3. Claims 18, 20, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dimitriou (4,572,766) in view of Wei et al (2004/0067414) and further in view of Voss et al (5,230,966).

Dimitriou in view of Wei et al disclose a heat exchanger having the claimed structure, with the exception of the heat transfer medium inlet having a branching section designed in a form of an arc of a circle and having a bend of 30 to 90 degrees as seen in a flow direction and the heat transfer medium outlet having a branching section designed in a form of an arc of a circle and having a bend of 30 to 90 degrees as seen in a flow direction.

Voss et al discloses a heat exchanger having heat transfer medium inlets and outlets with branching sections designed in a form of an arc of a circle and having a bend of 30 to 90 degrees as seen in a flow direction.

It would have been obvious to one of ordinary skill in the art in view of Voss et al to use heat transfer medium inlets and outlets with branching sections designed in a form of an arc of a circle and having a bend of 30 to 90 degrees as seen in a flow direction with the heat exchanger of Dimitriou in view of Wei et al, the motivation being to provide improved fluid distribution.

4. Applicant's arguments filed 23 April 2009 have been fully considered but they are not persuasive.

Applicant argues that the ducts 300 of Wei are not arranged perpendicular to the heat transfer medium ducts or offset from the plurality of disks. However, Wei shows the ducts 300 arranged perpendicular to the parallel heat transfer passages shown extending across the width of plates 302) such that the branching section (300) is offset from the plurality of disks (Fig. 3).

Applicant argues that Voss shows arc shaped passages formed within a plate and not offset from the plate. However, Wei discloses that it is known to form passages separate from a plate and offset from the plate (Fig. 3).

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Teresa J. Walberg whose telephone number is 571-272-4790. The examiner can normally be reached on M-F 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Teresa J. Walberg/
Primary Examiner, Art Unit 3744

/TW/